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## REMAINS OF BIRDS FROM CAVES IN THE REPUBLIC OF HAITI

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In a small collection of bones, mainly of mammals, secured in two caves in the Republic of Haiti by Mr. J. S. Brown and Mr. W. S. Burbank, during geological studies under direction of the U. S. Geological Survey for the Republic of Haiti, are a few bones of birds that have been placed in my hands for study by Mr. Gerrit S. Miller, Jr. The caves from which the bones were taken, according to information supplied by Mr. Brown, are on the slopes of the mountains northeast of St. Michel de l'Atalye, and in a direct line are about forty kilometers from the coast. Two caverns were visited on March 4 and 5, 1921, and small collections made to determine whether more extended explorations were advisable. The larger of the caves under discussion lay between three and four kilometers from St. Michel at an altitude of about 600 meters above sea level. An excavation near the rear of the cave to a depth of less than a meter through reddish dirt containing many rocks yielded a number of bones. Additional material was collected from a smaller cave on the side of a deep, dry ravine about three kilometers east of the first site. Near the rear wall in this cavern a pit dug to a depth of 1.6 meters through a layer of stones, bat guano and earth yielded bones below a depth of half a meter. For more detailed information regarding these sites reference is made to the paper by Mr. Gerrit S. Miller, Jr.,<sup>1</sup> in which descriptions of the mammal remains are given. The few bones of birds secured include only four species, three obviously recent and the fourth a remarkable owl whose existence has been wholly unsuspected. The latter is an indication of an extinct avifauna that with exploration may perhaps yield even stranger species. Study of extensive collections from caves in Porto Rico revealed seven species of birds not previously known from the island, six of them new to science and the seventh a species of rail described originally from kitchen midden deposits

<sup>1</sup> Remains of Mammals from Caves in the Republic of Haiti, Smithsonian Misc. Coll., Vol. 74, No. 3, 1922.

in St. Thomas and St. Croix.<sup>2</sup> All of these apparently are now extinct, though one, a whippoorwill, is represented by a skin in the Field Museum.

Proper identification of the specimens discussed below has been possible only through the fine series of bird skeletons collected by Dr. W. L. Abbott during his explorations in Haiti.

#### COLUMBIDÆ

##### CHÆMEPELIA PASSERINA (Linnæus)

A left humerus, entire save for the distal end, from the larger cave does not differ from that of a modern ground-dove.

#### CUCULIDÆ

##### CROTOPHAGA ANI Linnæus

A left humerus was secured in the smaller cave. As this bone is obviously modern this record has no bearing on the supposition that the spread of the ani through the Antilles has taken place during recent times.

#### TYTONIDÆ

##### TYTO OSTOLOGA sp. nov.

*Characters*.—Similar to *Tyto perlata* (Lichtenstein) but much larger (head of metatarsus one and one-half times as broad).



FIG. 1



FIG. 2

*Description*.—Type, U. S. Nat. Mus., Cat. No. 10746, proximal end of left metatarsus, from a large cave northeast of St. Michel de l'Atalye, Republic of Haiti, collected March 4-5, 1921, by J. S. Brown, and W. S. Burbank.

Metatarsus with inner glenoid facet (fig. 1) more extensive, somewhat more excavated than outer, irregularly quadrangular in outline, sloping toward rear, with posterior margin indented by outer margin of posterior semilunar groove; outer facet slightly more

<sup>2</sup> See Wetmore, Proc. U. S. Nat. Mus., vol. 54, p. 516; Proc. Biol. Soc. Washington, vol. 32, Dec. 31, 1919, p. 235, and vol. 33, Dec. 30, 1920, pp. 77-82.

elevated than inner, intercondylar tubercle broad, elevated inner side at anterior margin straight, outer side rounded, summit obliquely truncated toward outer side, sloping broadly in rounded outline posteriorly to terminate at the margin of the posterior semilunar sulcus so that it entirely separates the two glenoid surfaces; anterior surface (fig. 2) excavated deeply and abruptly beneath the median tubercle, where there is a slight overhang, anterior end of groove in outline elliptical, with outer side more abruptly delimited, and inner with wall more sloping; tubercle for tibialis anticus elongate, elliptical, slightly elevated, somewhat roughened; the two superior foramina slightly nearer to upper end of this tubercle than to proximal end of anterior groove, the outer foramen very slightly higher than the inner, and nearer the median line; both foramina small, placed in floor of anterior groove; inner margin of bone below head with a sharp ridge marking a tendinal attachment, inclined inward to form an overhang over the margin of the anterior groove; anterior semilunar groove only slightly indicated; posterior semilunar groove broad and deeply cut, slightly deeper at outer side; external head of talon triangular in lateral outline, with tip rounded, slight in size; internal head of talon somewhat broken at margin and below but much more extensive than the external division, forming a plate-like projection, concave on outer face, sloping outward to join anterior margin at a clean cut angle; outer superior foramen opening in posterior sulcus below and slightly within internal head of talon; inner superior foramen opening on outer face of outer head of talon not far from its center.

*Measurements.*—(Of type) lateral diameter of head at proximal end 17.5 mm.; greatest width of anterior groove 9.5 mm., antero-posterior thickness through external head of talon 11 mm.

*Range.*—Known only from large cave between three and four kilometers northeast of St. Michel de l'Atalye, Republic of Haiti. (Extinct.)

*Remarks.*—In addition to the head of the metatarsus described as type this huge barn owl is represented in the bones from this same cave by second and fourth metatarsal trochlea (Cat. No. 10747), that in all probability formed part of the metatarsus described as the type, and by the distal end of a right radius. These fragments are similar in outline to those in the common barn owl (*Tyto peralta*) but, like the head of the metatarsus, are comparatively speaking of gigantic size. The fourth trochlea is 13.5 mm. in width from the external sulcus to its free end. The second trochlea measures 11.7 mm. from the internal sulcus to its posterior end. The expanded end of the radius is 9 mm. broad.

In a series of six specimens of the common barn owl (*Tyto perlata*) the width of the proximal end of the metatarsus varies from 10.5 to 11.8 mm. and the length (measured from the top of the intercondylar tubercle to the lower margin of the third trochlea) from 70.0 to 82.0 mm. In *Tyto glaucops* these measurements are respectively 10.0 mm. and 64.0 mm. and in *T. bargei* 8.0 mm. and 5.6 mm. On this basis the tarsus in *Tyto ostologa* should have measured in the neighborhood of 120 mm. in length. The head of the tarsus is as robust as in a large snowy owl and was of course much longer.

Though *T. ostologa* may have possessed structural peculiarities of which we know nothing, the fragments at hand are so similar in conformation to the corresponding bones in *Tyto perlata* that there has been no hesitancy in placing the species in the genus *Tyto*.<sup>3</sup> It is much larger than any previously described in this group and so adds another remarkable form to those previously known from Haiti. As a natural corollary to the occurrence of *ostologa* in this cave we may suppose that the large rodents, described by Mr. Miller from the same deposits, formed the prey of this owl, so that we are indebted to the owl for the formation of the bone deposits. These may be considered as remains from pellets regurgitated by the bird, as similar formations of smaller mammalian remains in Porto Rico are attributed to the activities of *Tyto cavatica* Wetmore (extinct) and *Gymnasio nudipes* (Daudin). It may be remarked that *Tyto glaucops*, the modern barn owl of Haiti, is smaller than *T. perlata*.

#### TYRANNIDÆ

##### TOLMARCHUS GABBII (Lawrence)

A left humerus was secured in the smaller cave.

<sup>3</sup>It may be noted that the genus *Badiostes* Ameghino (Bol. Inst. Geogr. Argentino, vol. XV, Nov. and Dec. 1894, p. 601) which has been attributed to the Tytonidæ, appears from the figures and description to be related to the Falconidæ. Other extinct species ascribed to the Tytonidæ have been placed in the same genus as the barn owl and are all more or less similar to it in size.